

The western Caribbean complex of *Fasciolaria tephрина* de Souza, 2002 (Gastropoda: Fasciolaridae), with the description of a new species

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ABSTRACT

Fasciolaria delicatissima new species, a capacious, thin-shelled, deep-water fasciolariid from a restricted area of the southwestern Caribbean Sea, is compared with the similar *F. tephрина* de Souza, 2002 and *F. cf. tephрина*, a presumed color form of the latter; all three taxa have paucispiral protoconchs.

Additional Keywords: Southwestern Caribbean Sea, Honduras, Nicaragua, Recent

INTRODUCTION

The molluscan fauna of the western Caribbean was mostly unknown when one of the authors (EFG) began visiting Roatán Island, Bay Islands, Honduras in 1978. Many vessels of the commercially important Honduran shrimp and spiny lobster fisheries land catches at Roatán, and bycatches from those vessels has revealed a remarkable molluscan fauna. Most species caught in shrimp trawls are different than those caught in lobster traps, but both types of collecting gear have produced many indigenous species previously unknown to science. The fauna is so different that Petuch (1988: 62) identified it as one of several “relict pockets” in the Caribbean region. Although Petuch considered the pocket’s center to be around the Bay Islands (Utila, Roatán, and Guanaja) just off the Honduran coast, in reality the area comprises the entire wide continental shelf and upper slope that borders the Caribbean coasts of Honduras and Nicaragua (Figure 17). The range of the classic species *Voluta polypleura* Crosse, 1876 roughly defines the boundary of this “pocket.”

After a lapse of 15 years, trips to Roatán were resumed in 2012 by EFG. Some previous contacts had lately been working aboard vessels fish-trapping on the Honduran slope seaward of the 100-fathom (183 m) isobath (Figure 17). This activity had yielded species not seen

during some 60 previous trips, over a period of 20 years. Of particular interest was the recently described *Fusilaria garciai* Snyder, 2013, a fasciolariid with a paucispiral protoconch that grows to 225 mm and seems to inhabit at least the length of the northern upper continental slope from north of Cabo Camarón, Honduras to the Nicaraguan border. Also of great interest was a presumed color form of the typically white *F. tephрина* de Souza, 2002. Reported as the “spotched” form of *F. tephрина* by Snyder (2013: 128), the form is referred to here as *F. cf. tephрина*. Both the white and the colored form have been collected near the northeastern corner of the continental slope (Figure 17), but only the colored form has been collected with *Fusilaria garciai*.

The type locality for *Fasciolaria tephрина* is north of Quita Sueño Bank, Colombia (off northeastern Nicaragua), 14°40' N, 81°25' W, depth 480 m (de Souza, 2002; Figure 17). However, de Souza also recorded a specimen in the Kevan and Linda Sunderland collection that was taken “off Roatán Isl., Honduras, 420 m, in fish trap.” The fact that the Sunderland specimen was collected in a fish trap seems telling. Fishermen who have collected *F. tephрина* and *F. cf. tephрина* report that they are caught in fish traps set off the edge of the continental shelf. The topography of the upper slope in that area is too rough for trawling and probably unattractive to spiny lobsters, which usually live in warmer, shallower waters, perhaps explaining why the area has been avoided by shrimp and lobster fishermen.

Fasciolaria tephрина has also been reported from off Isla de San Andrés, Colombia (e.g., Miloslavich et al., 2010; Snyder, 2013: 128, fig. 14), an island of volcanic origin separated from the continental shelf and located off the southeastern Nicaraguan coast (Figure 17). However, inspection has revealed several shell characters that differentiate the San Andrés population from *F. tephрина*. The San Andrés population is described here as a new species and compared with *F. tephрина* and *F. cf. tephрина*.

MATERIALS AND METHODS

Specimens studied are located at the Museu de Zoologia da Universidade de São Paulo, Brazil (MZSP), the Academy of Natural Sciences of Drexel University, Philadelphia (ANSP), the William G. Lyons study collection (LC) and the author's collection (EFG). Shell sizes are reported in millimeters (mm), measured to nearest 0.1 mm with electronic digital calipers. Unless otherwise specified, measurements are of shell length (height), measured as the distance between the apex and the abapical end of the siphonal canal. Shells were weighed with a Mettler Toledo PB metric scale model PB 3002-S and measured to the nearest 0.01 grams.

SYSTEMATICS

Family Fasciolaridae Gray, 1853

Genus *Fasciolaria* Lamarck, 1799

Type Species: *Murex tulipa* Linnaeus, 1758, by monotypy.

***Fasciolaria delicatissima* new species**

(Figures 1–7)

Fasciolaria tephрина.—Mallard and Robin, 2005: 8, pl. 4; Robin, 2008: 207, fig. 9; Miloslavich et al., 2010: Table S6, no. 925 (in part); Snyder, 2013: 128, fig. 14 (in part) (*non Fasciolaria tephрина* de Souza (2002), *nec* Snyder (2013: 128, fig. 15)).

Diagnosis: Shell large, capacious, with very thin walls and paucispiral protoconch; shell color off-white with many thin, brown, uneven and sometimes interrupted spiral lines on spire and body whorl; lines not extending onto tan siphonal process.

Description: Shell large, up to 280 mm in length (Rosenberg, 2009), 105 mm wide, fusiform, semi-glossy, with swollen, rounded whorls and uncommonly thin walls. Protoconch (Figure 7) white, large, height approximately 3.5 to 4 mm, smooth, with one whorl; first half of whorl rounded, second half swollen; protoconch axis not deviating from that of teleoconch. Teleoconch with 7 rounded whorls, first two whorls shouldered to periphery, then straight (Figure 7); remaining whorls progressively more convex, body whorl swollen, globose. Suture deep, bordered anteriorly by a strong cord wrinkled by minute axial threads. Axial sculpture of numerous microscopic threads showing at start of teleoconch, approximately 30 on first whorl and 60 on second whorl; axial swelling appearing at periphery of second whorl, developing some 16 low nodes (Figure 7); nodes disappearing on later whorls; minute axial threads continuing on surface of shell through last whorl, becoming stronger on siphonal canal. Spiral sculpture subtly developing at beginning of first whorl, approximately 8 strong threads showing on second whorl, 5 threads on shoulder, which will become strong cords on later whorls; three threads below periphery

disappearing on later whorls; spiral threads on early whorls creating a somewhat reticulate sculpture as they cross axial elements; two adapical threads strongest, wrinkled by axial elements. Siphonal canal straight or rather sinuous, long, approximately 30 to 35% of shell length. Aperture widely oval, with many faint interior lirae best detected by rubbing a fingernail or pin across the surface; width approximately 20% of shell length. Parietal wall smooth, without callus; columella with two strong, oblique anterior plications, posterior one somewhat bifurcate; plications inconspicuously continuing as two or three long axial elements in different degrees of strength along dorsal side of siphonal canal (Figure 5). Outer lip thin, with 5 denticles at posterior end reflecting terminations of pre-sutural cords. Shell color off-white with uneven penciled-like brown spiral lines that terminate at beginning of siphonal canal and that show through to inside aperture; columellar area and siphonal canal light tan, canal with sporadic dark brown blotches in mature specimens.

Type Material: Holotype (Figures 1–2), ANSP 450737, 277 × 105 mm, north of Cayos de San Andrés, Caribbean Sea, Colombia, trawled, 350 m.; paratype 1, ANSP 466083 (Figure 3), 182 mm, with operculum; Paratype 2, EFG 31404 (Figures 4–6), 170.1 mm., All from type locality.

Other Material Examined: Two shells, LC unnumbered, 177.4 and 188.1 mm, trawled north of Cayos de San Andrés, Colombia, depth 350 m; one shell, LC unnumbered, 87.1 mm, Golfo de Morrosquillo, Colombia.

Type Locality: North of Cayos de San Andrés, Caribbean Sea, Colombia, 350 m.

Distribution: North of Cayos de San Andrés, Caribbean Sea, Colombia, trawled, 350 m; Golfo de Morrosquillo(?).

Etymology: From the Latin adjective *delicatus*, *-a*, *-um*, meaning delicate; used in the superlative to denote the unusual lightness and fragile nature of the shell.

Discussion: *Fasciolaria delicatissima* new species can be differentiated from most congeners by its unusually thin walls, its color markings and its paucispiral protoconch. The new species has been confused with *F. tephрина* de Souza, 2002 (Figures 10–13), and *F. cf. tephрина* (Figures 8–19, 14–16). *Fasciolaria delicatissima* shares with *F. tephрина* the large, capacious shell, the paucispiral protoconch, the deep-water habitat and relative geographic proximity. However, *F. tephрина* has a protoconch that deviates from the main axis, whereas the new species lacks that character; its protoconch is differently shaped, with a less convex first half of the whorl and a more bulbous second half (compare Figure 7 with Figures 9, 12 and 16). This difference is possibly what causes the protoconch of *F. tephрина* to be “deviated.”

Early teleoconch whorls of *F. delicatissima* are differently sculptured, with more spiral elements and more numerous (16 vs. 10), weaker axial elements than those of *F. tephрина* (compare Figure 7 with Figures 9, 12,

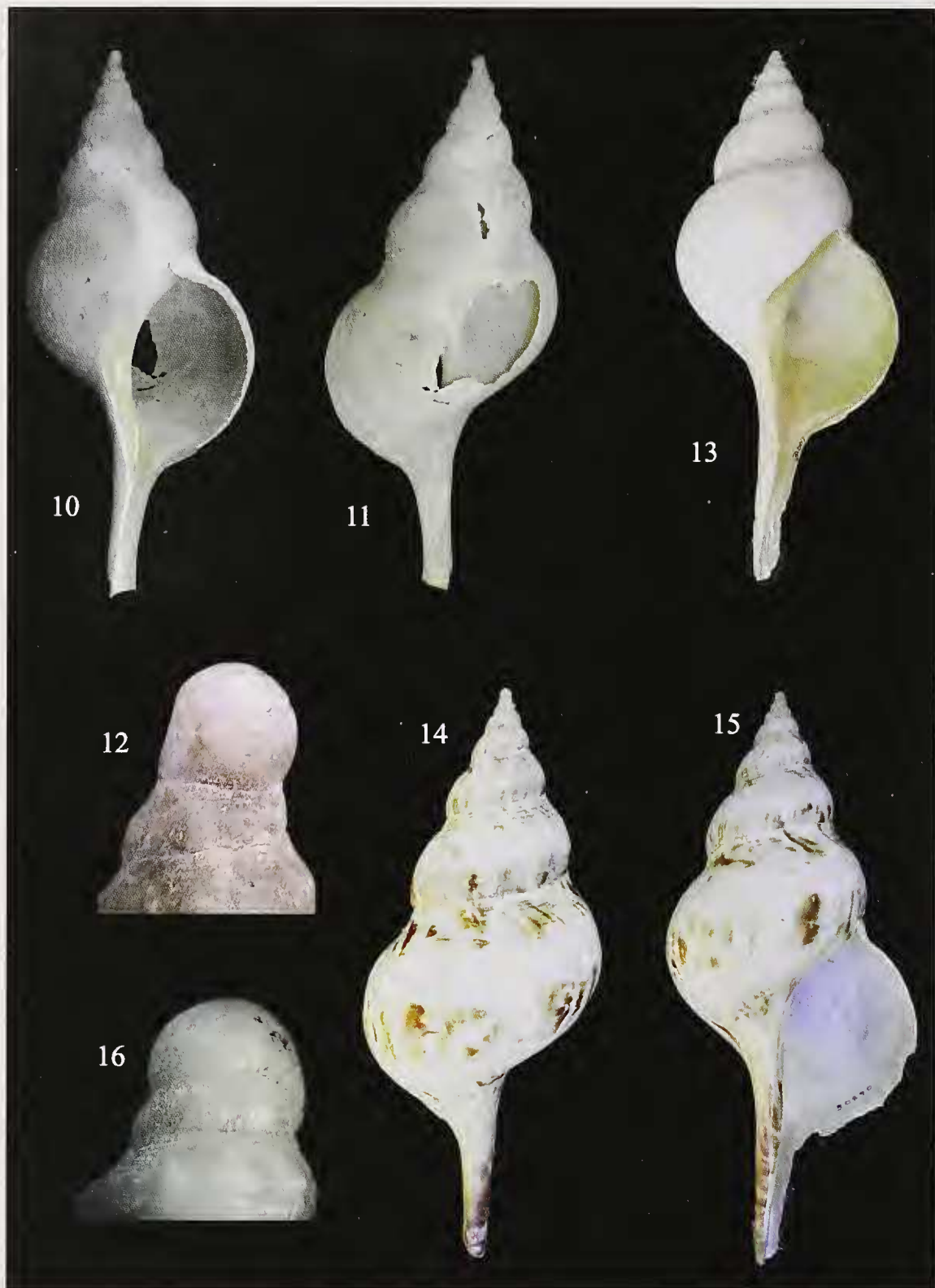


Figures 1–9. *Fasciolaria* species. **1–7.** *Fasciolaria delicatissima* new species, north of Cayos de San Andrés, 350 m. **1–2.** Holotype, ANSP 450737 (image copyright from Femorale with permission), length 277 mm, width 105 mm. **3.** Paratype ANSP 466083 (image copyright from Femorale with permission), 182 mm, specimen with operculum. **4–7.** Paratype, EFG 31404, length 164.9 mm, width 64.5 mm. **8–9.** *Fasciolaria cf. tephрина*, EFG 31298, length 165.9 mm, width 45 mm, near Honduras-Nicaragua border, in fish trap, 300 m.

and 16). Moreover, the shell surface of the new species is covered with minute axial threads evident under low magnification (Figure 6), its parietal area lacks an enameled wall, and the lirae inside its aperture are determined by tact; they are visually undetected. The two plications of *F. tephрина* are limited to the columella, but those

of *F. delicatissima* continue as ridges over the siphonal canal (Figure 5).

The shell of *F. delicatissima* is much thinner than that of *F. tephрина*. A 165.9 mm specimen of *F. cf. tephрина* (EFG 31298; Figures 8–9) weighs 46.06 grams, whereas a similar 164.9 mm specimen of *F. delicatissima*



Figures 10–16. *Fasciolaria* species. **10–13.** *Fasciolaria tephрина* de Souza, 2002. **10–12.** Holotype MZSP 35048, length 187.4 mm, width 73.8 mm, north of Quita Sueño Bank, 14°40' N, 81°25' W, in 480 m. **13.** EFG 31107, length 220 mm, width 85 mm, near Honduras-Nicaragua border, in fish trap, 300 m. **14–16.** *Fasciolaria cf. tephрина*, EFG 30890, length 230 mm, width 90 mm, near Honduras-Nicaragua border, in fish trap, 300 m.

(Paratype 2, EFG 31404; Figures 4–7) weighs only 23.16 grams.

The multilinate pattern and coloration of the shell of *F. delicatissima* is consistent in all specimens examined, differing from the white of *F. tephрина* (Figures 10–13) and the blotched pattern *F. cf. tephрина* (Figures 8–9, 14–16). The six specimens of *F. cf. tephрина* that were studied, all collected empty, clearly show the character-

istic blotched markings. Even the most eroded specimens have darker brown coloration at the tip of the anterior canal.

Although color intergrades between *F. tephрина* and *F. cf. tephрина* have not been seen, no differences between them are evident except coloration and a stronger enameled parietal shield in the white form. One may theorize that because all specimens of *F. tephрина* have been

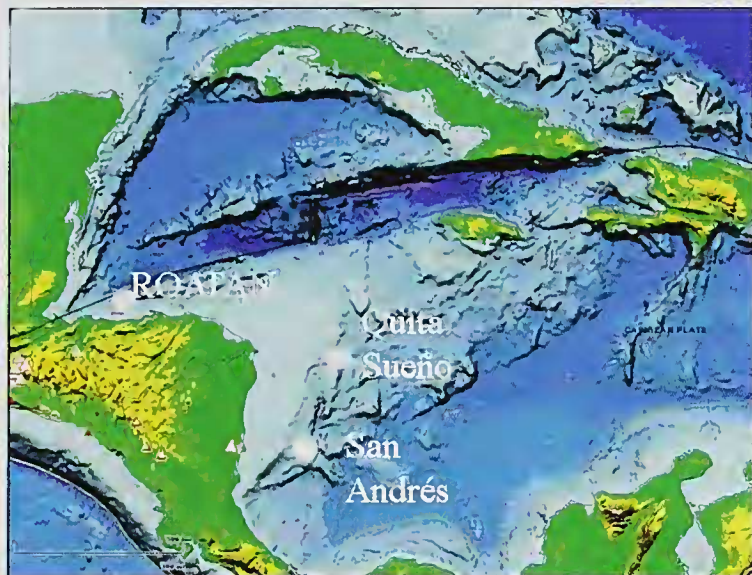


Figure 17. Bathymetric chart of the seafloor off Honduras and Nicaragua.

collected empty and the type material is in poor condition, shells of the white form could represent bleached material. However, several better-preserved specimens of the white form have come to light since the original description (e.g., Yidi and Sarmiento, 2011, Figure 493; also Figure 13, herein) and they show no indications of coloration.

The bathymetry at the eastern edge of the Honduran continental shelf and slope is rugged and complex (Figure 17). Quita Sueño Bank is not far from the edge of the continental shelf, but the abrupt benthic topography between them may lend itself to the development of small allopatric populations, particularly with direct developers such as species of *Fasciolaria*. Fishermen may spend weeks at sea and obtain shells from several non-contiguous populations and as they range over the continental slope, but such bycatch may be landed in a single box, making precise origins of the shells difficult to ascertain.

We question the “Golfo de Morrosquillo” locality for *F. delicatissima*. The Golfo is much too shallow to support the species, which otherwise has not been reported despite intensive trawling for shrimp there for at least four decades. Data available for all of the other *F. delicatissima* specimens indicate that they were obtained by trawls; at least one specimen was collected alive (Figure 3), which confirms the efficacy of that collecting method. This implies that the species lives on a flat bottom accessible to trawlers, and that would be at the base of the escarpment (Figure 17). Conversely, *Fasciolaria tephрина* and *F. cf. tephрина* have been collected exclusively “crabbed” in fish traps, the seafloor not being conducive to trawling. The latter two forms do not

seem to intergrade, but until more precise catch data become available, they should be regarded as belonging to a single species.

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